

# ECOLOGICAL MONOGRAPHS

OFFICIAL PUBLICATION OF THE  
ECOLOGICAL SOCIETY OF AMERICA

---

Volume 29, 1959

---

Published Quarterly by  
The Duke University Press  
Durham, N. C., U. S. A.

# ECOLOGICAL MONOGRAPHS

A QUARTERLY JOURNAL  
FOR ALL PHASES OF BIOLOGY

EDITORS: BOTANY, H. J. OOSTING, Duke University, Durham, N. C.  
ZOOLOGY, FRANCIS C. EVANS, University of Michigan, Ann Arbor, Mich.

BUSINESS MANAGER: WILLIAM G. OWENS, Duke University Press,  
College Station, Durham, N. C.

## MEMBERS OF THE EDITORIAL BOARD

1957-59

Robert B. Platt, Department of Biology, Emory University, Emory University, Ga.

Frank A. Pitelka, Museum of Vertebrate Zoology, University of California, Berkeley 4, Calif.

1958-60

F. H. Bormann, Department of Botany, Dartmouth College, Hanover, N. H.  
N. G. Hairston, Department of Zoology, University of Michigan, Ann Arbor, Mich.

1959-61

E. J. Dyksterhuis, U. S. Soil Conservation Service, Lincoln, Nebr.

E. W. Fager, Scripps Institute of Oceanography, La Jolla, Calif.

EX OFFICIO: Alton A. Lindsey, Purdue University, Lafayette, Ind.  
Lamont C. Cole, Cornell University, Ithaca, N. Y.

The editorial board of this journal will consider ecological papers which are in general long enough to make twenty printed pages or more. Shorter ecological papers should be submitted to the editor of *Ecology*, which is also published by the Ecological Society of America. Both journals are open to ecological papers from all fields of biological science.

Manuscripts should be typewritten with ample margins on 8½ x 11 in. paper. A "Table of Contents" should be included. Authors should try to conform in editorial detail in so far as it may be determined from inspection of recent numbers of the journal. Reprints, with or without covers, are obtainable at cost and should be ordered when proof is returned. Correspondence concerning editorial matters should be sent to the appropriate editor; that concerning subscriptions, change of address, and back numbers to the Business Manager, Duke University Press.

Subscription price: the United States, Canada, and the Pan-American Countries, \$6.00 per year; all other countries—\$6.00 a year additional for postage. Single numbers of the current volume are \$1.75. Back numbers, \$8.00 per volume, \$2.00 per number. Missing numbers will be supplied free when lost in the mails if written notice is received by the Circulation Manager within one month of date of issue. All remittances should be made payable to the Duke University Press, Box 6697, College Station, Durham, N. C.

Agents in Great Britain: The Cambridge University Press, Bentley House, 200 Euston Road, London, N.W. 1. Prices can be had on application.

Entered as second-class matter December 18, 1930, at the Post Office at Durham, North Carolina, under the Act of Congress of March 3, 1879.

COPYRIGHT, 1959, BY THE DUKE UNIVERSITY PRESS

# TABLE OF CONTENTS

Volume 29, 1959

## NUMBER 1, JANUARY

	PAGE
The Vegetation of Island Beach State Park, New Jersey.....	William E. Martin 1
The Ecology of <i>Conus</i> in Hawaii.....	Alan J. Kohn 47

## NUMBER 2, APRIL

Evidence of Photoperiodic Ecotypes in Trees.....	O. Vaartaja 91
Spatial and Temporal Movements of a Population of the Painted Turtle, <i>Chrysemys picta marginata</i> (Agassiz).....	Owen J. Sexton 113
An Analysis of a Population of Snowshoe Hares in Northwestern Montana.....	Lowell Adams 141
Response of True Prairie Vegetation on Major Flint Hills Range Sites to Grazing Treatments Carlton H. Herbel and Kling L. Anderson	171

## NUMBER 3, JULY

An Analysis of Forest Succession in Algonquin Park, Ontario.....	N. D. Martin 187
The Role of Physical and Biological Factors in the Culture of <i>Crassostrea</i> and <i>Mercenaria</i> , in a Salt-water Pond.....	Melbourne Romaine Carriker 219
Manner of Invasion of Volcanic Deposits by Plants with Further Evidence from Parícutin and Jorullo Willis A. Eggler	268

## NUMBER 4, OCTOBER

The Role of Ecotypic Variation in the Distribution of the Central Grassland of North America Calvin McMillan	285
A Study of Pseudo-Nanism in <i>Pinus rigida</i> Mill.....	John W. Andresen 309
Parasitic Egg Laying in the Redhead ( <i>Aythya americana</i> ) and Other North American Anatidae Milton W. Weller	333
Studies on Population Productivity II. Factors Governing Productivity in a Population of Smallmouth Bass.....	Kenneth E. F. Watt 367